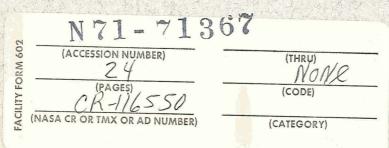SPACE
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R^2 ON E:

SOME SUGGESTIONS FOR RESEARCH ON THE ROLE OF RESEARCH IN EDUCATION

by

C. West Churchman

Internal Working Paper No. 116

May, 1970

UNIVERSITY OF CALIFORNIA, BERKELEY

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Some Suggestions for Research on the Role of Research in Education*

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University of California, Berkeley

The purpose of this paper is to discuss the role of research in the educational process especially at the higher educational level, but not necessarily restricted to this area of education. My main effort will be to try to suggest some areas where educational research on the research process could be quite helpful to the future of higher education.

I need to begin this discussion with a number of apologies and explanations.

First, I realize that I've probably been asked to deliver this paper because I've written on the "systems approach." This paper, however, emphasizes one aspect of this approach, namely, the determination of the goals of the educational system, and not the efficient ordering of components and resources to attain given goals. In other words, I have a strong bias in the subject of educational planning towards a continuing re-examination of our educational goals. I realize that the attempt to define the goals of education was at one time very popular and has since entered into a period of disillusionment as we discovered how difficult it is to define these educational goals in a manner which would make any difference in the educational process. I think the disillusionment itself was mistaken, just as a disillusionment in the attempt to define national goals would be a mistake. Obviously, an area so rich and difficult as the definition of human goals demands, like any life form, a growth through immaturity to some kind of

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mature status, and the maturation period may be very long indeed, as I am convinced it will be in the case of educational goals. Simply to be disappointed because in a relatively short period of time we have not been able to reach a reasonable consensus on educational goals is certainly no reason to give up the enterprise.

Second, I should explain at the outset that, since I am not myself in the field of education, some of my suggestions are probably already in process. The limited time for the preparation of this paper has not permitted a thorough examination of the many projects already undertaken in the higher educational field.

Third, it should be pointed out that the paper really concerns itself with research at three different levels. (1) There is the research carried on by the student, and the relationship of this research to his other educational and social activities. (2) There is the research undertaken by the educational researchers who are trying to examine some issue in the connection between the role of the student's research and his educational goals. (3) There is the research of this paper itself which, as I have pointed out, is somewhat limited with respect to background literature materials. It is also strongly biased by my own research preferences at the present time and, namely, the use of research to study large social systems. This bias means that a good deal of what I will have to say will not be restricted to the research process itself, either at the student level or at the educational research level, but to the relationship of this process to other kinds of activities occurring in society.

I must also express a bias regarding the concept of research. This can best be explained by a very broad definition of research, namely, that research is a set of human activities where the activities are intended

to produce knowledge and, in particular, a knowledge of a more effective

means of accomplishing socially desirable ends. You will note that in this

definition I have made no reference to such things as control of variables,

statistical inference, and the like, because I regard these to be possible

tactics and strategies of the individual whose intent is to acquire

knowledge. These strategies may, in fact, not be desirable in many con-

texts. They are, of course, highly desirable when it's possible to conduct

the research within experimentally controlled situations, and when there is

an exclusive desire to learn exactly what elements of nature cause other

elements to behave in a certain manner. My bias is that I believe that

educational research and, in particular, educational evaluation makes a

mistake if it attempts to wed itself rigidly to the strategy of precision

and control. There's an immense amount of knowledge acquired by a human

being without the use of carefully controlled experiments. Take, for

example, the process of learning how to drive an automobile, which, for

each individual and within that context, falls under my definition of re-

search. It could scarcely be said that the learner carefully controls the

variables associated with his hands, feet and eyes, and learns which par-

ticular motions cause various events to occur in maneuvering an automobile.

There's much to be said on the benefit side for carefully controlled ex-

periments, but there is also the cost of rigor to consider. In the terms

of the systems scientist, we require a "cost-benefit" analysis of our re-

search strategies. In order to keep educational evaluative research from

becoming unnecessarily trivial, it may be necessary to give up some of the

traditional concepts of control. At the same time, of course, I'm not

saying that loosely designed research is good in and of itself. What is

obviously required in the field of educational research are some research

studies aimed at trying to evaluate research strategies and tactics for various kinds of problems. For example, we need to know a great deal more about the circumstances under which carefully controlled experiments have a positive net value in the educational process. We also need to learn a great deal more about the conditions under which simulation, e.g., on computers, is a useful way of learning about the educational process.

Consequently, the first area of research I would recommend for study is a "systems approach" to educational research, i.e., an examination of the tactics and strategies of such research systems and a systematic way of trying to evaluate where these strategies and tactics seem best and where they become less than adequate.

With these apologies and suggestions behind us, suppose now we turn to the first level of research, namely, the research carried on by the student in higher education. We can begin by ruling out considerations of certain aspects of research in the student's life. I don't doubt that the role of research in graduate education, especially at the Ph.D. level, is well established within many disciplines. It is not apt to change radically in the coming years. I think it is a plausible hypothesis that in many disciplines, especially in the physical sciences, the role of research in the student's program is well embedded within the policies of the particular discipline. To be sure, there may be a number of questions that one would want to ask about specific policies of institutions with respect to the rigidity of course requirements, the preclusion of the student from research programs until much too late in his curriculum, and so on. In this paper, however, I'm not addressing myself to the problem of the role of research within well established graduate curricula.

There are two areas which I would like to examine. One is the rather specific role that research might play in the teaching process within

higher education. The second is concerned with the overall goals of the educational process and specifically with the contrast between "knowledge transfer" and "maturation of an inquiring style."

Turning to the first of these, it is perhaps useful to review the debate that has been waged about the relationship between teaching and research in institutions of higher learning.

The traditional approach can be rather easily stated. It argues that one of the principal tasks of most institutions of higher learning, especially at the undergraduate level, is to provide education to a large number of students as economically as possible. The argument stipulates that the only means of accomplishing this goal is the traditional method of teaching in classrooms either to a large number of students who are subsequently broken up into quiz sections, or to a large number of sections, many of which are run by young teaching assistants. Research, the argument goes on, demands individual attention because every research project is highly specific; if the research is to be performed in an adequate manner, the younger student requires very careful supervision on the part of someone knowledgeable in the field, e.g., an associate or full professor. It is not feasible, therefore, to expect that a large number of students can be taught by means of an expanded research program in which under-graduates are involved actively in doing a significant amount of research. Furthermore, research is highly specific, because it must deal with a very concrete aspect of the natural world. But the purpose of much of under-graduate education is to provide the student with as broad and general an educational base as possible. Of course, research should be an integral part of the curricula when the student is being prepared for a life as a scientist or an engineer, i.e., in professions where research itself plays

an integral role. But for the general student a significant concentration
on research deprives him of the kind of broad education which our under-
graduate programs are supposed to provide. Finally, the argument concludes
by pointing out   the other deficiency of research, namely, that it is
in conflict with the teaching program in terms of the faculty's time. The
argument stipulates that faculty are rewarded for their research output,
especially in large universities, and that this reward system in effect
requires that the faculty concentrate on their research efforts to the
neglect of hours that might be spent in direct contact with undergraduates.

The other side of the argument can best be expressed in its
strongest form in the terms of one of my earlier teachers, Professor Henry
Bradford Smith, who was a strong proponent of the use of research as a
teaching method. According to Smith, the ideal college would be one in
which the undergraduate from the beginning works with a professor in
developing a research project which will occupy his attention during his
four years. As a result of the design of a specific research project,
according to Smith's concept, the undergraduate is naturally led into all
the ramifications connected with his research. He will sense the require-
ment to write well and even dramatically, to understand the historical
background of his research effort, to delve, if necessary, rather deeply
into the mathematical and statistical methodologies required to bring his
research to fruition. In other words, he will attain an understanding
of the relationship of his own research program to the larger system.
In such a way, thought Smith, the student would naturally be led to the
kinds of "general education" which has been so strongly advocated in past
decades. But instead of his being fed general education in a piecemeal
fashion, his education would become meaningful and relevant to him. As a

historical point, I might say that Smith's concepts of educational relevance were stated some forty years ago. The notion that a great deal of so-called general education is irrelevant is by no means news to many of the teaching community.

We can see that the issues involved in the debate are by no means so specific that one could conduct a test that would once and for all settle the matter. This situation is quite characteristic of the major issues that concern any large scale social system. Immanuel Kant in his Fundamental Principles of the Metaphysics of Morals states the matter superbly. In his discussion of what he calls the prudential imperative which today we would translate into the concept of policy, Kant argues that the basic issues cannot be settled in any final way because our knowledge depends on specific empirical tests, whereas the settlement of basic issues involves the total system of a person's life or many persons' lives.

Kant's point is well taken in connection with the issue we are now discussing. The question is: what policy should be followed in under-graduate education vis-à-vis research and teaching? Undergraduate educa-tion is only a part of the total life of the individual, although it is probably accurate to say that in many cases the four years of undergraduate life have tended to be rather decoupled from the rest of the individual's life, e.g., his high school education and subsequent career after graduation from college. This does not mean that research has no role in clarifying the issues. It simply implies that research by itself cannot ever settle the debate. The role that research will play in the present discussion is to identify one or more of its weakest elements of the world view of each side.

In this case, as I see it, one of the chief weaknesses of the traditional world view of the undergraduate educational process is its claim

that the traditional method of teaching a student in a classroom is the most effective way of handling student education. This position seems especially weak in the case of what might be called the methodological sciences, i.e., statistics, mathematics, logic, etc. The methodological sciences also should include English composition and what used to be called rhetoric, i.e., the ability to express oneself clearly in the spoken word, and perhaps other disciplines like foreign languages and even historical methodology.

The kind of research I have in mind would entail a study of the extent to which a student learns his methodology in the context of research, compared to his learning in the more traditional classroom situation. And in this connection I should make it clear that when I use the term "student" research in this context, I'm thinking of a student who's studying a real-life problem, say, a problem of the planning of an organization such as a university library or a health center or a business firm. To make the point clear, it is helpful to distinguish between the "exercise" and the "problem." Exercises that are found at the end of texts in statistics, operations research, etc., almost always provide the student with an opportunity to "apply" what he has learned in a given chapter, but they may not be helping him develop his methodological capabilities in real-life situations. Exercises at the end of chapters can be described as tasks where the basic data and system constraints are given by an external authority, in this case, the textbook or the teacher. In the real-life situation, such basic information and constraints have no clear authorities. The student learns that there are differences of opinion within the organization as to what things are relevant or what constraints should be placed on a problem. Indeed, many students who have received a thorough training in the methodologies, when

faced with problems in real-life organizations often feel extremely frus-
trated because there is a lack of authority. My point can be well il-
lustrated by a recent textbook in management science by Harvey Wagner called
Management Science: Applications. What one finds in Professor Wagner's
book is a series of exercises in which the student is provided all of the
basic elements of a solution. It may be a disservice to the methodology
itself to claim that such exercises will prepare the student for "applica-
tions."

Thus, in the educational research I have in mind, an attempt would
be made to determine whether a student learns better how to use statistics,
mathematics, English writing, etc., outside the classroom preparation within
the context of a real-life research problem, or whether a certain amount
of formal teaching and real application is better, or whether the entire
subject matter can be learned within the classroom.

It goes without saying that the research I have in mind would be
done with psychological correlates in mind. Obviously, some people do have
a capability of storing a vast amount of information about techniques, and
it may very well be true that such persons can learn just as well or even
better in the classroom exposure than they would within the real-life
research. It also goes without saying that a "control group" should be in-
cluded in such an experiment, where the student is essentially self-
learning, i.e., studies out of the text on his own with minimal consultation
with a teacher.

A great weakness in the position that research is the best way to
learn is the assumption that this method can be used with a large number
of students and a relatively few number of faculty members. The position
naturally has to argue that the present method of organizing a faculty

member's time is incorrect. It's clear that the professor's main effort should be to attain a face to face contact with the student in directing him into bodies of information, methods, etc., which will help to better accomplish his research mission. This means that the teacher's student-classroom exposure hours would be reduced to a minimum. The position can hardly hold that no classroom teaching is to be permitted. Evidently a number of students could gather together to study a certain phase of a problem where, say, statistical methods are essential. In such an event, the traditional classroom technique seems almost obvious to be the correct one to follow. What the position must try to explore is the extent to which students can be their own educators, i.e., the extent to which one student can be successfully used to teach another or where a student can engage in his own self-teaching. The concept is well expressed in Russell Ackoff's paper on the "new university" in which he discusses the educational organizations broken up into "self-teaching centers."

There is also another aspect of this problem which needs to be investigated. If we were to attempt to change institutions of higher learning into self-teaching institutions, so to speak, then obviously there would be a number of political pressures imposed by both administrators and faculty to prevent this step, which in a way looks like a relinquishment of the faculty's prime responsibility. This is the problem of implementation which plagues all planners and systems scientists. It is the implementation problem in its very strongest form, since the policies being considered are those which appear to strike at the very heart of the traditional way of running the academic institution. What seems really called for in this connection are some educational inventions which on the one hand preserve the faculty's traditional role of freedom and educational leadership, but

at the same time provide a kind of flexibility in which the student can enter into a teaching relationship with other students.

I'd like to turn now to the second topic of my presentation, which concerns itself with the type of research which the student might carry on which would provide the kind of educational breadth and depth that is so desperately needed. I'd like to return to some remarks that were made earlier about the relationship of the college to the other aspects of an individual's life, i.e., the linkages between the college part of his life and his high school and subsequent career. I have a feeling, unsupported by any large amount of information at my disposal, that many high school students look on college as continuing the most unsatisfactory aspects of their high school experience, while at the same time providing no qualitative change in their life. Part of this feeling undoubtedly arises because of the ill-stated goals of colleges with respect to their educational programs.

The one common conception of the goal of a college can be described in terms of a model of the educational process in which the educational institution acts as a transfer of knowledge, from books or from individuals, to the student. This knowledge, of course, is not just restricted to facts, but involves conceptual knowledge of the ways in which people should think about issues in a rational manner, appreciate their environment, the arts, and so on. The essential idea, however, is based on the transfer concept, so that the faculty as well as the library play the role of the storehouse of human knowledge, and the student plays the role of the recipient of this knowledge. The aim, then, is to produce an individual who is knowledgeable in the sense that he can respond, say in a conversation, to issues familiar to his peers.

In the remainder of this paper, I would like to discuss an alterna-
tive objective and its corresponding model for the institution of higher
learning. This objective of the college is based on the model which says
that the purpose of the college as well as other educational institutions
in an individual's life is to create a "mood for inquiry." According to the
model, this mood of inquiry must fit in to the individual's personality and
life style, i.e., to his psychological being. Consequently, the emphasis
is more on the activity of inquiry as it becomes meaningful to the individual
than it is on any specific informational content that he should receive
according to certain prescribed educational standards. Also, the purpose
is not to transfer knowledge per se, because now knowledge only becomes a
means of inquiry. Rather, the purpose is to create within the individual
the motivation towards inquiry, as one of his life functions.

To summarize, the fundamental characteristics of inquiry are the
following:

a. the motivation to learn

b. openness to change of fundamental assumptions

c. the development of inquiry as an integral part of the
    individual's total life style

It would obviously be impossible in this paper to display all of
the different styles of inquiry, especially if one admits that inquiry is
an integral part of the individual's life and hence that the style is
virtually unique to each individual. It may be worthwhile, however, to
repeat that aspects of inquiry, like consistency, precision, and control,
do not represent the fundamental characteristics of inquiry. These charac-
teristics, to be sure, have proved extremely useful in certain areas of
science and scholarship but, as I mentioned earlier, they have also tended
to narrow the scope of the research and, indeed, in many instances to make

it trivial and thoroughly unimportant as far as either social change or the individual is concerned. It goes without saying in these days of the proliferation of research findings that publication is also not a fundamental characteristic of inquiry. There is, of course, the need for certain individuals to communicate with others in the process of inquiry, but it is doubtful whether the particular technology of the printed word really serves as an important characteristic of inquiry for most people.

The model that I am discussing, which is related to what Kant calls a "whole life model," obviously requires the development of an inquiring mind at the earliest possible stage, even in the pre-nursery school, and certainly through grammar and high school. For example, there seems to be no obvious reason why grammar and high school students should not, if they feel so inclined, express a strong interest in the manner in which their school is run, and in the environment of the school.

It would seem reasonable to assume in this model that the college of the years from 17 to 21 becomes essentially the maturation process of the individual, especially of his inquiring mind. Consequently, the "success" of the college program within this model is essentially to be assessed in terms of whether or not the program seems able to bring the student from pre-maturation through to the mature individual who has confidence in his own methods of inquiry as the motivation for inquiry, and all of the humility and modesty that goes along with the inquiring process.

It's also assumed by this model that the maturation process by no means stops at the end of college. After college comes the life process in which "higher education" needs to play a fundamental role.

Finally, it's assumed that everyone is included in the total process of becoming a mature, inquiring mind, including the faculty, who can no longer be regarded as the authorities on curriculum and knowledge transfer.

The faculty themselves are in the process of developing their inquiring minds. No amount of depth of inquiry in a particular field necessarily completes the inquiring aspect of the mind.

The model assumes that the direction of inquiry is a matter of individual style and motivation. Although today there is a great deal of talk of using inquiry into the matters concerned with community, it is not the intent of the model to claim that such inquiry has superiority over other types of inquiry. It is clear that the human race at the present time knows very little about its communities, both the smaller communities surrounding urban and rural centers of population as well as the larger communities of the state, nation, and inter-nation. Our lack of knowledge is well displayed in the fact that we have very little reliable data concerning the impact of social change. We can regard, for example, the poverty program in its early years as essentially a blind man's walk, because the planners knew very little about the conditions of poverty and the reactions of the poor class, as well as reactions of other individuals who might become interested in poverty as a business enterprise.

The lack of good information is well demonstrated in the field of economics, where, although we have become reasonably powerful in certain theoretical concepts, the basic information is missing.

But the direction of inquiry may be into many other areas. Dr. Kilton Stewart has an interesting report on the Senoi of Malaya, a tribe which spends a great deal of its inquiring time with dream material from childhood all the way to death. According to Dr. Stewart, the children are encouraged at a very early stage to regard their dream life as an important part of the natural world and to try to understand its import, and to control their own role within their dreams. The result, according

to Dr. Stewart, has been a society without crime or any other forms of severe social disruption. This is the case where the total community has taken on an inquiring style in a radical direction.

In the second part of this paper the discussion has been held at a very general level in order to set the stage for more specific suggestions for educational research, which I'll describe within three styles of inquiry: the experimental, the systemic, and the philosophical.

The experimental style of inquiry, as I have said, emphasizes control and measurement. It attempts to be as precise and consistent as possible and to control the variables in such ways that the inquirer feels that he is justified in making a substantially valid conclusion. It is doubtful whether it would be legitimate to call the experimental style "objective," because in its broadest sense objectivity refers to the ability to grasp the essence of reality, whereas the experimental style in many cases does nothing of the kind. Indeed the concept of objectivity in research that we have inherited in the 15th and 16th centuries probably needs a far broader meaning when we turn to problems of social change, for example of the sort that would be entailed in the research on the maturation process of the inquiring mind.

The most obvious experimental study which might be made is to examine a revised reward system for education. In the model which calimed that the purpose of the college is to transfer knowledge, the reward system essentially becomes the grading system. It is taken for granted that the knowledge inherent in a college, e.g., in the faculty's minds and the library, is adequate and does not need to be studied in depth, except at those infrequent times when the college itself is evaluated. It is rather the student's ability to receive knowledge that is being transmitted to

him which is taken to be the fundamental reward system. The grade that the
student receives then represents a standard measure of accomplishment of
students within the college system.

In the "inquiry" model which regards the college as essentially
promoting the maturation of the inquiring mind, it is clear that since
everyone is involved in the process, the process is to be evaluated primarily
for the purpose of learning how the process proceeds, rather than trying to
grade individuals in terms of their level of attainment. To be specific,
suppose for example the college would entertain the prospect of an experi-
ment in which there would be two student groups, both of them concerned
with the ecological problems associated with air, water, and other types
of pollution. The first group would be exposed to the usual courses in
biology, engineering, etc., which are relevant to the ecological problems.
It would go through the normal process of consultation with faculty, their
own individual course papers, and possibly a terminal "thesis." The student
would receive grades in the usual manner.

In the second group, each student would work out his program in terms
of his own inquiring style and interest. The faculty would not necessarily
play a primary role in holding the group together, but would let the
leadership characteristics develop within those individuals who have any
interest in this aspect of inquiry. The group would decide on the type
of personal contacts they would find most useful. There would be no grades
associated with the program. Students would be expected at the end to try
to evaluate their own learning process during the exposure and to point
out its essential weaknesses.

Since this is an experimental program, according to its style it
needs to come to some kind of a conclusion. "What is being tested in this

program? is the type of question the experimental mind naturally poses.
It seems almost obvious in this case that what is being tested is the
ability of the educational program both to transfer knowledge as well as
to bring about a more mature inquiring mind. The evaluators therefore (in
this case, the "experimenters") would be engaged in trying to determine
the extent to which the first group, i.e. the group that is oriented toward
the transfer of knowledge, has also brought about a "maturation of the
inquiring style" in the individual. Consequently, the first group in
addition to the standard kinds of tests of its ability to acquire knowledge
from various sources, would also be tested in terms of interest aroused by
the group's program in further inquiry, i.e., the kinds of doubts and
motivations for further learning that have been generated. The second model
of education that I discussed above obviously makes the interest in con-
tinued inquiry a fundamental measure of performance of the educational
process. As a consequence rather than just examining the student in terms
of what they have learned, the second model emphasizes an examination of
the students in terms of what they wish to learn, or, if the study is a
longitudinal one, the kinds of inquiry that they go into after a particular
stage like the one being discussed. But the experimenter's aim would be
to determine the extent to which the "transfer of knowledge" goal is met
by the second group. In other words, we have two strategies of education,
and two goals; does the experiment indicate that one strategy dominates the
other with respect to both goals?

The next area of research I have labelled "systemic." Systemic
inquiry has to give up some of the control and precision of experimental
inquiry because it reaches out into a broader domain. It may indeed have
to give up consistency in its usual sense. If it is to be successful,

systemic research definitely has to be imaginative and speculative. Some of the best literature on the future of society is systemic, in that the research obviously is not trying to establish once and for all what the future of society will be like, and in that the best researchers do use their own intuitions, imaginations, and speculative abilities to write their scenarios.

In the case of the suggestion that I am making in the second part of this paper, the need for systemic inquiry is clear enough. What the second model obviously suggests is an expansion of inquiry as a mode of human living so that every individual within the society in the ideal objective has an intense interest in inquiry according to his own style. A very fundamental systemic question would be the societal implications of such an expansion of inquiry with respect to other social institutions. For example, it is perfectly clear that many, if not a majority of human beings, are intensely curious about the lives of other people. This curiosity is by no means restricted to the feminine side of the human race. It is very natural for us to be snoopers. (Indeed snooping may be one of the main reasons why young men go into the social sciences.) An educational system that expands the natural inclinations to inquiry may very well also expand the natural inclination to snoop. What would such an expansion mean, say with respect to political institutions, to family structure, or to "law and order" institutions? As often happens, systemic inquiry takes us to the door of the house of morality, if not into the interior chambers. Will we have to add "considerations of others," or "fairness," as constraints on the natural inclination to inquiry?

On a more mundane level there is the systemic question of what flows in and out of the inquiring process. As I mentioned earlier, we would

not want to say that documents form the basic input and output. In an "inquiring society," what kinds of transmittals should occur between the individuals?

Finally, the systems analyst of recent years has tried to find some general "scoring system," like cost-benefit, to enable him to evaluate alternative plans. Naturally there has been considerable debate about the appropriateness of these scores, but in my opinion the system's analysis effort is worthwhile, especially since it tells us how little we really know about our marvelous suggestions for social change. Hence, I'd strongly support a systems study of any suggestion for radical change in education. Thus, if my "inquiry" model makes sense, we should examine the cost of the implied change of the educational process from an emphasis on the transmittal of knowledge to an emphasis on the maturation of the inquiring mind. Of course this aspect of the inquiry will get into the details concerning the real difference between the two goals. Are we talking about a major change in educational institutions or merely a change in emphasis here and there? It is obviously premature to say whether the growing need for opening up inquiry really constitutes a major revolution in the institutional system. If it is a major revolution, naturally we would be led to assess the relevant cost of carrying out the changes. If it is realistically a minor change, then the cost considerations may not be all that relevant.

The mention of costs of course brings to mind the question of benefits. This is a question which I have thus far suppressed. It is clear that my own bias is towards the value of the maturation of the in-quiring style rather than the transfer of knowledge, which I have regarded to be of secondary importance; i.e. transfer of knowledge may be quite critical for certain types of inquiring styles and not for others. In a

sense, then, I have been presupposing throughout the second part of this paper that the benefits are clearly there and favor the second model. Such an assumption on my part is as unwarranted as most world view assumptions that people make in areas like education and health, and does need to be examined within some broader context, e.g., by those whose interests are in the general goals of human society.

These remarks take me to the last of the research efforts which I've kind of called the philosophical. In this style of inquiry, one goes far beyond the precise, well controlled, quantified considerations, and consistency is certainly not the highest value. In a philosophical mode of inquiry the purpose is to reveal the underlying paradoxes of the intellectual process. The basic underlying paradox of all research on human societies can best be stated in the form of the following kind of question: how can we conduct systemic inquiry into the inquiring process? To say that it is possible to assess the costs and benefits associated with one type of educational program compared to another is to assume that we have the capability of educating ourselves in such an assessment. This assumption draws us into an immediate vicious circle. By what means can we educate ourselves about the best method of education without having presupposed the very answer to the question that we are asking?

The paradox has many different forms. One can raise the question, for example, whether all educational planning does violence to the human individual, because it is essentially involved in trying to figure out ways in which we can change individuals' lives without our really knowing whether we have the moral right to devote our time and energy to such efforts.

Philosophical paradox is a difficult area of inquiry. For individuals whose inquiring style is experimental it turns out to be extremely

frustrating, and their natural inclination of inquiry leads them to smudge the paradox, so to speak. Smudging paradoxes is not terribly difficult because the paradox itself is based on very broad considerations that are not well substantiated. Paradoxes, for example, can be smudged by making very, very careful distinctions concerning the meaning of terms. When one does make very careful distinctions, the paradox often disappears in the area in which the distinction is made. But the paradox by no means disappears in reality, because it will inevitably show up in some other domain even more critically. I make these remarks about smudging paradoxes in the hope of avoiding a fruitless discussion about the relevant importance of conducting philosophical research in the area of education. Such a discussion is apt to be fruitless because it is based primarily on differences in individual inquiring styles. There's nothing that can be said definitively to the experimental inquirer which would lead him to believe that philosophical inquiry has much importance. By the same token, there's nothing very much one could say to the strongly philosophical or systemic inquirer that would lead him to believe that experimental inquiry is anything more than trivial. Perhaps if we can recognize that there are styles that in large part arise from our own intellectual backgrounds as well as our own personalities, the discussion could take on a more general and fruitful emphasis.

In summary, I have tried in this paper to go from a fairly specific question about educational policy and research to very general considerations. Within the more specific suggestions I have tried to examine the ways in which research can be used to strengthen the teaching process, especially in the methodological disciplines. In the more general I have tried to consider the very broad problems of educational policy and to

contrast two different viewpoints: the viewpoint that the educational
process at the college level is essentially a transmittal of knowledge
versus the viewpoint that the educational process is essentially the
development and maturation of the inquiring style of the individual. With
regard to the second more general effort, I well recognize that many
individuals, following their own inquiring style, will be inclined to say
that educational process should do both, i.e., should both transmit
knowledge and develop individual proclivities for inquiry. To keep the
paper from falling apart, I suppose it would be essential to say that any
such synthesis based on the concept of "both" certainly raises the whole
question in its most serious form, namely, how can we accomplish both
goals?

I should say that anyone who responds to the second part of the
paper by "both" has not experienced the educational process in the way my
own individual mode of inquiry has experienced it. For me, the contrast
is a forceful one in the area where I do most of my work, i.e., graduate
education. My own mode of inquiry has led me to conclude that most of our
master's and Ph.D. programs are sadly lacking in their ability to create
a keen interest in continuing inquiry. It is not merely that very few
Ph.D.'s continue to do research in an active way, because this is a weak
indicator of the seriousness of the situation. I believe that most of our
graduate programs, especially in the social science area, simply tend to
produce people whose continued interest in inquiry has been killed off in
the process of the program. So, although this has been in a sense a
journey from the specific to the general, or from the practical to the
sublime or ridiculous, nevertheless, I think the end of the journey has
some extremely critical implications with respect to the practice of

education at both the undergraduate and graduate levels.

NOTE: As I remarked at the beginning, I well realize that many of the suggestions contained in this paper are being carried out in one form or another in various kinds of educational programs of research. Many of these I am familiar with and many others I undoubtedly don't know anything about. I've intentionally kept away from making references to the enormously growing literature in educational research, both at the experimental and the systemic and philosophical levels, some of which I have shamelessly borrowed from outright. I find in my own reading that such reference making is disruptive of the thinking process of the author, because one is taken from the author's chain of reasoning into someone else's inquiring style which never fits very well. Repeated citations of the form, "As X says," seem to me to be becoming an obnoxious method of defending one's ideas. It is clear that a paper of this kind is after all a very personal document based on one man's experience and his particular style of interpreting that experience. My debts are many and profound, but to include them in this paper would be a disservice to the reader and to other writers.